February 25, 2019

Via FCC Electronic Comment Filing System

Marlene H. Dortch
Office of the Secretary
Federal Communications Commission
445 12th Street SW, Room TW-A325
Washington, DC 20554

Re: Improving Alert Names and Behavior of Wireless Emergency Alerts (PS Docket Nos. 15-91 and 15-94).

Dear Marlene H. Dortch:

I would like to suggest some backward compatible ways to improve alert names and behavior in enhanced Wireless Emergency Alerts.

eWEA defines five classes of alerts: 1) Presidential; 2) Child Abduction Emergency (e.g., AMBER); 3) Imminent Threat; 4) Public Safety; and 5) State/Local WEA Test. The internal classes of alerts can use the same names, but I suggest improving the names presented to the public. Because localization requires different alert names in different countries, essentially all major mobile equipment manufacturers have ways to customize local names in mobile equipment.

1. Rename eWEA alert classes:
    a. National Emergency Alert instead of Presidential Alert
    b. Missing / Wanted Person Alert instead of Child Abduction Emergency / AMBER

I also suggest a few needed alert behavior improvements based on almost 10 years of Commercial Mobile Alert System/Wireless Emergency Alert experience in the United States and in other countries. The alert behavior changes would improve the public WEA experience and reduce the unnecessary public and alert originator annoyance with existing alert behavior. The suggested alert behavior changes reinterpret parts of past FCC Reports & Orders, the ATIS and 3GPP standards. The suggested improvements maintain technical backwards combability for existing mobile devices and cellular protocols. But the enhancements will require software changes in the Federal-CMSP interface to take advantage of the improvements.

2. Imminent Threat class split into a) Emergency Alert or b) Weather Alert sub-classes.

And finally, I propose changes to the default alert behavior of mobile devices for certain alert categories. Important but not time-critical alerts won't disturb people during sleeping hours. But after they wake up, the alert will be ready for them as soon as they check their mobile device. Alert originators will have options to notify people already awake and active during early morning hours, without delay sending alerts to avoid disturbing people sleeping. If used

properly by alert creators, this could reduce the public annoyance and complaints about early morning and late-night alerts.

3. Change the alarm behavior for certain existing alert categories to match the new Public Safety class notification behavior.

If you have any questions concerning these comments, please do not hesitate to call (703-892-1810) or email (sean@donelan.com) me.

Respectfully submitted,

Sean Donelan

Enclosure

Re: Improving Alert Names and Behavior of Wireless Emergency Alerts (PS Docket Nos. 15-91 and 15-94).

1. Improving the Public Names of Wireless Emergency Alerts

Mobile device connected to GSM, UMTS, and LTE access technologies use the 3GPP TS 23.041 Message ID Code, not the alert class name, to identify alert categories and classes. For example, mobile devices treat all messages with Message ID 4370 or 4383 as a Presidential Alert. The user interface software alert behavior is based on that message ID number i.e. the alarm sound and vibration as well as the visible frame displayed around the alert message. The mobile device looks up the text "Presidential Alert" in a local configuration table based on the message ID number.

While using code numbers is easy for computers, humans prefer to use names for things. The Commercial Mobile Service Alert Advisory Committee proposed alert class names to differentiate the alert classes but did not conduct much market research on public perception of the alert class names. The CMAS/WEA alert class name "Presidential Alert" was a huge improvement, and more meaningful to the people on the CMSAAC compared to the "Emergency Action Notification" and "EAN" code used by the Emergency Alert System. It was an understandable choice by the advisory group at the time but hasn't aged well.

The FCC rules incorporated the alert class names from the CMSAAC in its rules. And likewise, the supporting standards developed by the Alliance for Telecommunications Industry Solutions and the cellular industry 3rd Generation Partnership Project (3GPP) incorporated the same names for alert classes. However, the FCC rules wisely did not require Commercial Mobile Service Providers or Mobile Device Manufacturers use those names in the public user interfaces of their products. Nevertheless, corporate lawyers and programmers tend to adhere strictly to even implied suggestions in Commission rules and standards. Which meant the default names in products are often copied directly from the standards and rules.

1.1. Presidential Alert class name in mobile device user interfaces

As nations around the world adopted the ATIS and 3GPP Wireless Emergency Alert standards for their countries, the most common change made by regulators in each country is renaming the "Presidential Alert" class. Some countries do not have a President as the Head of Government.

Changing the display name has no technical impact, but the effort regulators worldwide put on choosing the name of their national emergency alert indicates its importance. There was some public debate in the U.S. about the name used for the mandatory WEA alert category during the 2018 FEMA nationwide test of the Wireless Emergency Alert system.

Because of localization requirements in different countries, essentially all major mobile equipment manufacturers have ways to customize the local display names used for WEA alerts in mobile equipment. This means changing the public name in product user interfaces is relatively easy for commercial mobile service providers. While changing display names may be easy, commercial service providers and national regulators should try to maintain compatibility

how Message ID codes are used worldwide. Otherwise, international travelers occasionally receive odd and confusing alert messages as they carry mobile devices globally.

Consistent with the WARN Act and existing FCC rules, the Presidential Alert class behavior and class name used in standards could remain unchanged. It functions as the one "mandatory emergency alert" class in all countries, regardless of its name. WEA user interfaces do not need to be identical world-wide. However, I suggest the FCC, FEMA and commercial service providers engage social research on best practices for choosing WEA public user interface names in various languages. The names should avoid government-speak and be acceptable by the public. Compatible branding on mobile devices would also make Public Service Announcements easier and reduce some public milling behavior if alerts are appeared similar on different devices. One possible suggestion for display names:

Public CMAS classes:

CMAS Class Name	**English User Interface Name**	**Spanish User Interface Name**
Presidential Alert	National Emergency Alert	Alerta de emergencia nacional
Imminent Threat • Extreme Alert • Severe Alert	Emergency Alert	Alerta de emergencia
Child Abduction Emergency	AMBER Alert	Alerta AMBER
Public Safety	Public Safety Alert	Alerta de seguridad pública
State/Local WEA Test	Test Alert	Alerta de prueba

Hidden CMAS classes:

CMAS Class Name	**English User Interface Name**	**Spanish User Interface Name**
Required Monthly Test	Monthly Test Alert	Alerta de prueba mensual
CMSP-defined	Reserved Message	Mensaje reservado
Exercise	Exercise Message	Mensaje de ejercicio

1.2. Child Abduction Emergency/AMBER class name in mobile device user interfaces

At the the CMSAAC was developing the original Commercial Mobile Alert System architecture, the Child Abduction Emergency alert was essentially the only missing person alert of its kind in the Emergency Alert System. Since then, and due to the success of the AMBER Alert program, a wide-variety of missing person and wanted person "color" alerts were created by states. The FCC recently adopted the Blue Alert code as part of the Emergency Alert System to notify the

public of threats to law enforcement and to help apprehend dangerous suspects. States also have created Silver Alerts, missing elderly person, Gold Alerts, missing person with a cognitive impairment, Green Alert, missing veteran, Yellow Alert, person fleeing hit-and-run, and others.

While the Commission has not specifically authorized the use of the Wireless Emergency Alert system or Emergency Alert System for other types of color-code missing person alerts, the Commission has not shown any interest in exercising oversight or reviewing how state and local jurisdictions use WEA and EAS. As a result, state and local alert originators use various EAS and WEA codes, such as Civil Emergency Message and Local Area Emergency for state and local missing person color code alerts.

One thing all the new color code alerts (Blue, Silver, Yellow, etc.) have in common is a legislative history that says: "like AMBER alerts." Negatively, because the new alerts are not processed "like AMBER alerts" through WEA and mobile devices, they don't behave like AMBER alerts. Instead of the public being able to opt-out of missing person alerts using the AMBER alert setting, the public opt-out of all alerts.

Because the desired WEA class alert behavior is the same across the different colors of missing and wanted persons, I suggest renaming the "Child Abduction Emergency/AMBER" alert class to the "Missing/Wanted Person" alert class. AMBER Alerts would continue to be part of the Missing or Wanted Person alert class. The Missing/Wanted Person class would be backward compatible, using the 3GPP TS 23.041 Message IDs 4379 and 4392.

Changing the Child Abduction Emergency/AMBER class name on mobile devices should require only minor configuration updates to change the text. However, the Federal Alert Gateway to CMSP Gateway Interface specification also needs to be updated to map the event codes BLU, CAE, and other Missing/Wanted Person alerts with the CMAC_special_handling element to the newly renamed "Missing/Wanted Person" alert class along with future color codes. I expect commercial mobile service providers to object to any change.

The contents of each alert message itself would identify the specific type, e.g., AMBER Alert:

> `WEA Text: Phoenix, AZ AMBER Alert: LIC/000-ABC (AZ) 2018 Black Nissan Altima`

or a Blue Alert, e.g.,

> `WEA Text: Miami, FL BLUE Alert: LIC/000-ABC (FL) 2014 Black Honda Accord`

Nevertheless, I expect alert originators will increasingly use WEA for missing and wanted person color code alerts in the future. I also expect the inconsistent creation of Missing/Wanted Person alerts compared with AMBER alerts will increasingly generate public complaints and customer service calls to commercial mobile service providers.

Combining AMBER Alerts with Missing/Wanted Person Alerts, along with an alert behavior change I suggest, could alleviate some of those customer service complaints.

2. Imminent Threat split into Emergency Alerts and Weather Alerts

The WEA opt-out capability is only useful when alert originators can appropriately code high-importance and low-importance alert categories. And the public can make informed opt-out choices based on recognizable different types of alerts. Enabling mobile device end-user control of unwanted WEA alerts is an important factor for end-user acceptance. The lack of control is extremely frustrating for end-users, especially when irrelevant alerts interrupt what the person is doing.

Some emergency managers proposed eliminating the WEA opt-out capability. In the end, that would be self-defeating for emergency managers, frustrate the public, and annoy politicians elected by the public. It's understandable that emergency managers believe every emergency alert is critical, otherwise they wouldn't have issued them. Giving end-users even a small amount of control can increase user acceptance, and decrease users disabling alerts completely. Weather radio manufacturers and the National Weather Service learned this lesson a long time ago.

The Commercial Mobile System Alert Advisory Committee architecture included several innovative ideas for processing alerts using the Common Alerting Protocol (CAP). Many of those ideas have worked well. A few of them haven't worked as well. After 10 years, it's time to revisit some of those ideas. The CMSAAC grouped all alerts into three broad groups (Presidential, Imminent Threat and AMBER). For Imminent Threats, CMSAAC used a matrix of CAP Urgency, Severity and Certainty elements in CAP creating two sub-classes, Extreme and Severe, with eight message codes in each language. This supported an end-user opting out of both Extreme and Severe Imminent Threat alerts or opting out of only Severe Imminent Threat alerts.

Table 1 Original eWEA Imminent Threat Message Categorization

eWEA Message Category	CAP Severity	CAP Urgency	CAP Certainty	Main MsgID	Add'l MsgID
Extreme Alert Message	Extreme	Immediate	Observed	4371	4384
	Extreme	Immediate	Likely	4372	4385
Severe Alert Message	Extreme	Expected	Observed	4373	4386
	Extreme	Expected	Likely	4374	4387
	Severe	Immediate	Observed	4375	4388
	Severe	Immediate	Likely	4376	4389
	Severe	Expected	Observed	4377	4390
	Severe	Expected	Likely	4378	4391

While the Imminent Threat matrix was very elegant, in practice alert creators have difficulty choosing appropriate Severity, Urgency and Certainty values for each alert. As a result, mobile device end-users tend to opt-out of all emergency alerts because they can't figure out how stop only some types of alerts. The largest creater of WEA messages, the National Weather Service, unintentionally overwhelms most Imminent Threat categories. That is not the fault or unique to U.S. National Weather Service weather alerts. In most countries, the meteorological bureau tends to be the largest generator of public alerts.

I propose keeping the same the CMSAAC Imminent Threat Extreme/Severe structure and 3GPP Message ID code numbers for backward compatibility with existing mobile devices. Old WEA mobile devices will continue to display Extreme Alerts and Severe Alerts in a compatible way.

By splitting imminent threat alerts into two categories called Emergency Alerts and Weather Alerts, the end-user opt-in/opt-out choices are more understandable. It also helps clarify how alert creators should appropriately code CAP alerts.

To do this, I suggest exchanging the CAP Category element for the CAP Certainty element in the Imminent Threat matrix. An Emergency Alert means none of the alert's CAP Category elements contain "Met,". If any of the alert's CAP Category elements contain "Met," it is a meteorological or a Weather Alert. Using the CAP Category element value "Met" instead of the EAS-ORG parameter code keeps the change compatible with worldwide CAP implementations.

New eWEA mobile devices would sub-divide the Imminent Threat matrix into Meteorological and non-Meteorological categories based on the 3GPP Message IDs.

Table 2 Revised eWEA Imminent Threat Message Categorization

eWEA Message Category	CAP Severity	CAP Urgency	CAP Category	Main MsgID	Add'l MsgID
Extreme Alert Messages	Extreme	Immediate	Not-Met	4371	4384
	Extreme	Immediate	Met	4372	4385
Severe Alert Messages	Extreme	Expected	Not-Met	4373	4386
	Extreme	Expected	Met	4374	4387
	Severe	Immediate	Not-Met	4375	4388
	Severe	Immediate	Met	4376	4389
	Severe	Expected	Not-Met	4377	4390
	Severe	Expected	Met	4378	4391

The pairing of Emergency Alert and Weather Alert values in the Imminent Threat matrix is intended to maintain backward message ID compatibility. The old "Observed" certainty value is

used for Emergency Alerts because alert creators tended to use the maximum Urgency / Severity / Certainty values for everything. The National Weather Service is one of the few alert creators which attempts to use the full range of values, i.e. both Observed and Likely.

The result gives non-meteorological alert creators four clearer alert levels for imminent threat emergency alerts. And the National Weather Service or meteorological bureau gets four alert levels for imminent threat weather alerts. Note: Unlike the EAS-ORG code WXR, the "Met" Category is not restricted to the National Weather Service. It could be used by other alert originators for weather-related alerts. Likewise, the National Weather Service can also issue non-meteorological emergency messages.

Re-writing and simplifying the message category description:

Table 3 New eWEA Category Message ID Descriptions

eWEA Message Category	Category Message ID Description	Main MsgID	Add'l MsgID
Extreme Alert Messages	Extreme Emergency Alert	4371	4384
	Extreme Weather Alert	4372	4385
Severe Alert Messages	Extreme Emergency Expected	4373	4386
	Extreme Weather Expected	4374	4387
	Severe Emergency Alert	4375	4388
	Severe Weather Alert	4376	4389
	Severe Emergency Expected	4377	4390
	Severe Weather Expected	4378	4391

Sometimes fewer options make choices easier. Refactoring the imminent threat message categorization matrix directs alert creators to two simpler weather or non-weather 2x2 matrix categories. This make CAP alert coding easier for alert creators and alert template creators.

Table 4 Weather or Non-Weather Alert Matrix

Non-Weather Alerts		
	Alert	Expected
Extreme	4371 4384	4373 4386

Weather Alerts		
	Alert	Expected
Extreme	4372 4385	4374 4387

Severe	4375 4388	4377 4390		Severe	4376 4389	4378 4391

Mobile device equipment manufacturers and mobile operating system user interface designers decide how much choice is given to the mobile device end-user. A sample eWEA options menu could include the following:

Table 5 Sample Revised eWEA Options Menu

Emergency Alerts	
National Alerts	ON
Both Extreme and Severe Alerts	ON / OFF
Emergency Alerts (Severe)	ON / OFF
Weather Alerts (Severe)	ON / OFF
Expected Emergencies & Weather	ON / OFF
Missing or Wanted Person Alerts	ON / OFF
Public Safety Information Messages	ON / OFF
Test Alerts	
Test Alerts	ON / OFF
(hidden) Exercise Messages	ON / OFF
(hidden) Monthly Test Alerts	ON / OFF
(hidden) Reserved Messages	ON / OFF

The sample eWEA options menu uses nesting to indicate sub-option dependencies. For example, turning off "Both Extreme and Severe Alerts" disables (turn off) the categories Emergency Alerts (Extreme) and Weather Alerts (Extreme) as well as the three sub-options: Emergency Alerts (Severe), Weather Alerts (Severe) and Expected Emergencies & Weather. On the other hand, turning off "Weather Alerts (Severe)" should turn off Weather Alerts (Severe) and implicitly turn off the Expected Weather (Severe & Extreme) categories. But it would not affect the categories: Weather Alerts (Extreme), Emergency Alerts (Severe & Extreme) or Expected Emergency (Severe & Extreme).

To simplify the sample eWEA option menu, some imminent threat categories are treated implicitly part of other options. For example, the Extreme Expected Emergency & Weather

categories are implicitly part of their Severe Threat alert counterparts, like the existing eWEA option handling. Turning off the Emergency Alerts (Severe) should also implicitly turn off the Expected Emergency (Extreme) category, not the Emergency Alert (Extreme) category. Turning off the Weather Alerts (Severe) should also implicitly turn off the Expected Weather (Extreme) category, not the Weather Alert (Extreme) category.

Finally, the Expected Emergency & Weather option should turn off just the least important imminent threat categories: Expected Emergency (Severe) and Expected Weather (Severe).

While it's somewhat long to describe, this should be the least astonishing behavior for most end-users. But it is not intended to be prescriptive or preclude innovative user interface improvements by user interface designers.

Apple iOS gives end-users only two choices: 1) AMBER alerts and 2) Emergency Alerts. Alphabet Android usually gives end-users three choices: 1) Extreme alerts, 2) Severe alerts and 3) AMBER alerts. I expect user interface designers will continue to use very minimal eWEA options menus.

Table 6 Sample Minimal eWEA Options Menu

Emergency Alerts	
Emergency Alerts	ON / OFF
Emergency Alerts (Severe)	ON / OFF
Weather Alerts (Severe)	ON / OFF
Forecasted Emergencies & Weather	ON / OFF
Missing or Wanted Person Alerts	ON / OFF
Public Safety Information Messages	ON / OFF
Test Alerts	
Test Alerts	ON / OFF

Once again, the Federal Alert Gateway to CMSP Gateway Interface specification would need to refactor the imminent threat categorization matrix by exchanging the Certainty element for the Category element. Fortunately, the CMAC_category is already included with the CMAC_alert_info element.

3. Change the alarm behavior for certain existing alert categories

The three original classes of CMAS alerts use the same a common alarm behavior with a unique attention signal and vibration cadence. The WEA enhancements in 2016 added the Public Safety message and State/Local WEA Test classes with different default alarm behaviors.

- Public Safety messages are not required to use the same unique attention signal and vibration cadence. The default configuration for presenting Public Safety messages is on.
- The default configuration for presenting State/Local WEA Test is off. When enabled State/Local WEA Test messages use the same unique attention signal and vibration cadence.

Changing selected alert categories' default alarm behavior would enabling alert originators to reach more active end-users during off-hours, while not disturbing sleeping end-users with less time-sensitive alerts. On the other hand, active mobile device end-users would still get the alert immediately. Mobile devices idle for long periods of time, i.e. more than 30 minutes, would unobtrusively store the less time-sensitive alert messages. The next time the end-user checks the device, i.e. when they normally wake up, or the device's do-not-disturb hours end, the inactive mobile device would present the alert to the end-user using its normal notification methods.

Following the Public Safety message precedent, the selected alert categories could use the normal device notification method. The end-user must still be notified, but less time-sensitive alerts do not require the shrill attention-grabbing WEA alarm.

I suggest changing the default alert behavior of the two Severe/Expected message ID categories (expected severe emergency and expected severe weather). These alert categories tend to be used for less time-sensitive forecasted and future events which usually impact travelers. Alert originators want to reach travelers early enough, so they can return home safely. But it's often unnecessary to disturb people already asleep at home about these types of alerts. Because some people leave early and other people sleep late, it been difficult for alert originators to choose the best time to send early morning advisories before travelers leaves home. The new method would store less time-sensitive alerts on long-time idle mobile devices during the early morning hours. The device would present the alert when the end-user wakes up and checks the device.

Likewise, I also suggest changing the default alert behavior for Child Abduction Emergency / AMBER messages or renamed as Missing / Wanted Person messages for the same reason. AMBER Alert authorities want to reach active people at any time of the day and night. However, sleeping people are very unlikely to see a missing vehicle or person. Late-night AMBER Alerts wake up a lot of people. Annoyed people tend to turn-off Amber alerts. With the new process, sleeping end-users would get the AMBER Alert after they wake up and check their device.

Table 7 Changed Default Alert Behavior

Mobile Category/Behavior	Default	Alert Behavior	Main MsgID	Add'l MsgID
Severe Emergency Expected	On	Normal/DND	4377	4390
Severe Weather Expected	On	Normal/DND	4378	4391

Missing / Wanted Person	On	Normal/DND	4379	4392
Public Safety Information	On	Normal/DND	4396	4397
Test Alert	Off	WEA Alarm	4398	4399

Enabling new default alert behavior requires changes to end-user mobile device software. Existing mobile devices would continue to use the current alert behavior in response to messages using those 3GPP Message IDs. This wouldn't require changes to the Federal-CMSP Interface or alert originator software.

Appendix A – Consolidated eWEA Category / Behavior Table

Main MsgID	Add'l MsgID	CAP Severity	CAP Urgency	CAP Category	eWEA Category / Behavior Revised Description[1]	Active Default	Alert Behavior	Theme color	EU-Alert Description
4370	4383	N/A	N/A	N/A	Critical Emergency Alert	Mandatory	WEA Alarm	Black	EU-Alert Level 1
4371	4384	Extreme	Immediate	not Met	Extreme Emergency Alert	On	WEA Alarm	Purple	EU-Alert Level 2
4372	4385	Extreme	Immediate	Met	Extreme Weather Alert	On	WEA Alarm	Purple	EU-Alert Level 2
4373	4386	Extreme	Expected	not Met	Extreme Emergency Expected	On	WEA Alarm	Orange	EU-Alert Level 3
4374	4387	Extreme	Expected	Met	Extreme Weather Expected	On	WEA Alarm	Orange	EU-Alert Level 3
4375	4388	Severe	Immediate	not Met	Severe Emergency Alert	On	WEA Alarm	Red	EU-Alert Level 3
4376	4389	Severe	Immediate	Met	Severe Weather Alert	On	WEA Alarm	Red	EU-Alert Level 3
4377	4390	Severe	Expected	not Met	Severe Emergency Expected	On	Normal/DND	Yellow	EU-Alert Level 3
4378	4391	Severe	Expected	Met	Severe Weather Expected	On	Normal/DND	Yellow	EU-Alert Level 3
4379	4392	N/A	N/A	N/A	Missing / Wanted Person	On	Normal/DND	Blue	EU-Amber
4380	4393	N/A	N/A	N/A	Monthly Test Alert	Off/Hidden	WEA Alarm	Green	EU-Monthly Test
4381	4394	N/A	N/A	N/A	Exercise Message	Off/Hidden	WEA Alarm	Green	EU-Exercise
4382	4395	N/A	N/A	N/A	Reserved Message	Off/Hidden	WEA Alarm	Grey	EU-Reserved
4396	4397	N/A	N/A	N/A	Public Safety Information	On	Normal/DND	Blue	
4398	4399	N/A	N/A	N/A	Test Alert	Off	WEA Alarm	Green	

Table 8 Consolidated enhanced Wireless Emergency Alert class behavior

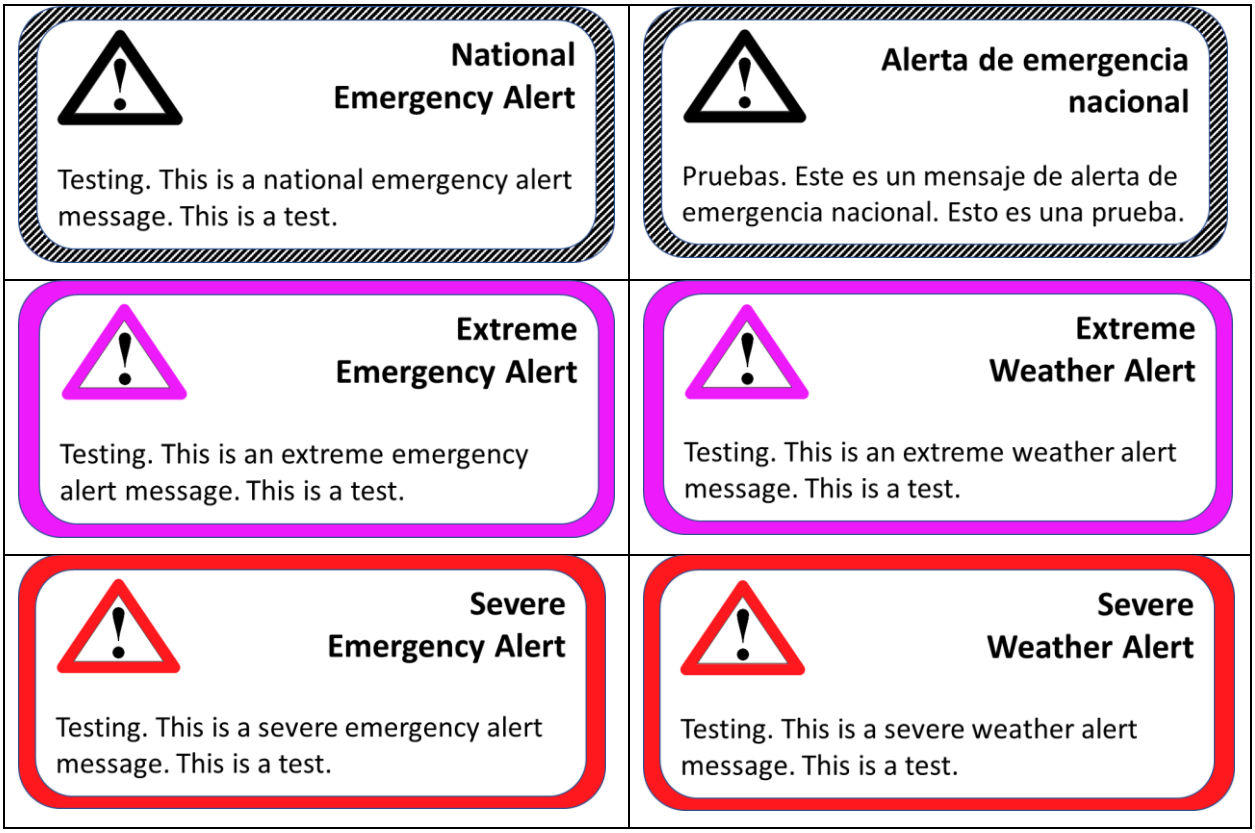
[1] The revised eWEA category / behavior descriptions avoid country-specific terminology, such as presidential alert. The descriptions are intended for analyst, programmer and operator use. The public names for alert classes should be chosen based on end-user experience testing following country-specific and language-specific requirements.

Appendix B – Sample Alert Themes

These alert samples are illustrative, not prescriptive. User interface designers are encouraged to improve alert presentation based on user testing experience and mobile device capabilities. For example, some mobile devices may not support colors or have limited fonts. Nevertheless, the alert display presentation should not distract or obfuscate the content of the alert message.

These sample alert themes demonstrate a simple combination of colors, symbols and words to consistently distinguish between different types of alerts based on 3GPP Message IDs. End-users may have color-blindness, limited vision, use different primary languages, or other handicaps. The alert message display should be consistent with the eWEA Options menu, so end-users easily opt-out of unwanted message types.

eWEA mobile devices should prevent alert spoofing by non-eWEA messages using controlled presentation elements.



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